BT-002 PATENT

## **Abstract**

Annatto extract composition (AEC), including cis and trans geranyl geraniols (GG) and tocopherol-free C-5 unsubstituted tocotrienols (T3), increases the de novo synthesis of intermediate isoprenoid and distal protein products, including endogenous coenzyme O10 (CoO10), dolichols (DL) and all subsequent GG-prenylated and DL-glycosylated proteins, including GG-porphyrinated hemes. This intermediate and distal product replenishment by AEC reverses maladies of myotoxicity (of both drug and non-drug origins), including maladies that affect the muscle, kidney, eye, GI tract and skin, nerve, blood, and CoO10-related syndromes of energetics and LDL protection. AEC anabolically increases the endogenous de novo CoO10 synthesis via GG elongation/prenylation of side-chain and conversely CoQ10 catabolically increases the endogenous de novo GG synthesis via beta-oxidation of CoO10. Also, such AEC decreases de novo synthesis and disposal of triglycerides (TG) in humans via PPAR activation and SREBP deactivation. Such drop in TG by AEC reverses maladies of insulin resistance (IR) and metabolic syndrome (MS), prediabetes, diabetes and diabetes-related cardiovascular diseases (CVD). GG activates PPAR and down regulates SREBP transcription factors. This AEC, containing GG, inhibits cancer growth whether or not GG involvement in protein prenylation is required.